

SOLAR & WIND POWER GENERATION TRAINER



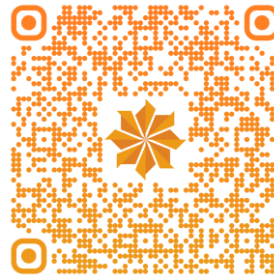
Overview

This trainer allows to investigate the synchronous operation of Solar Power Generation and Wind Power generation as small microgrid. The solar part consists of a PV panel and an array of halogen lamps as a sun simulator. The positions of both the PV panel and Sun Simulator can be controlled manually using joysticks and also from the software. It allows to simulate real light, daytime, yeartime and investigate the PV performance in different irradiation. The wind part consists of a wind tunnel and a real wind turbine-generator set. It allows to simulate real wind and investigate the generator performance in different wind speeds. In off-grid mode it allows to investigate the battery charging process using a DC charge controller and also the discharge using an AC-DC Inverter and loads. In on-grid mode it allows to implement the synchronization with the Wind Power Generation using a Grid-tie inverter.

Topics covered

- ✓ Structure and design of a solar photovoltaic power plants
- ✓ Study of photovoltaic solar panels
- ✓ Operation of the solar power station in battery charging mode
- ✓ Autonomous operation of a solar power plant supplying a load
- ✓ Protection in solar power plant in case of emergencies
- ✓ Structure and characteristics of wind turbines and wind power plants working off-grid
- ✓ Structure and characteristics of wind generators used in wind power plants.
- ✓ Characteristics of electrical loads of wind power plants.
- ✓ Characteristics of wind power plant in battery charging mode.
- ✓ Characteristics of off-grid wind power plant supplying the load.
- ✓ Protection in wind power plant in case of emergencies
- ✓ Operation of PV and Wind systems in synchronized mode.

YouTube Link: <https://youtu.be/gwl6dK0r4u0>



Solar & Wind Power Generation Trainer Hardware Pictures



Solar & Wind Power Generation Trainer Software Screenshots

